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Notice of Allowability	Application No.	Applicant(s)	
	10/677,735	MCHUGH ET AL.	
	Examiner	Art Unit	
	Henry S. Hu	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 2nd RCE of October 30, 2006.
2. ☒ The allowed claim(s) is/are 1-29 and 31.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. ☐ Notice of References Cited (PTO-892) 2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ 4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. ☐ Notice of Informal Patent Application 6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date <u>10-20-2006</u>. 7. ☐ Examiner's Amendment/Comment 8. ☒ Examiner's Statement of Reasons for Allowance 9. ☐ Other _____. |
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DETAILED ACTION

1. This Office Action is in response to **2nd RCE** along with **Amendment** filed on October 30, 2006. With such a **2nd RCE** amendment, **Claims 1 and 31 were amended**; Claim 30 was previously cancelled, while no claim was currently cancelled or added. To be more specific, the process of parent **Claim 1** has been amended in two ways as: (A) to clarify the sequence of combining step, agitation or mastication step, and permitting step; and (B) to point out that the importance of crystalline form in making free flowing powder. The examiner thereby withdraws claim objection for Claim 11 as well as 112-2nd claim rejection on Claim 1 in the previous Final Office Action (for 1st RCE) dated August 4, 2006.

2. The examiner accepts the **Drawing with only one figure** (Figure 1) originally filed on October 13, 2003 and later filed on September 27, 2006. **Claims 1-29 and 31 are now pending** with only one independent claim (Claim 1). An action follows.

Allowable Subject Matter

3. Claims 1-29 and 31 are allowed.

4. The following is an examiner's statement of reasons for allowance: The above claims 1-29 and 31 are allowed over the closest references:

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5. The limitation of parent Claim 1 in present invention relates to a process for producing homogenous blends of chemical agents and polymers, comprising:

(A) combining, in the presence of a supercritical fluid, at least one polymer capable of expansion in the presence of said supercritical carbon dioxide, which includes at least one functional group distributed at one or more locations along its chemical backbone, with at least one chemical agent that forms a crystalline solid, which includes at least one functional group, which is capable of associating with said at least one functional group distributed at said one or more locations along the chemical backbone of said polymer, said combining step permits said at least one chemical agent to impregnate within said at least one polymer;

(B) permitting said at least one functional group on said chemical agent to associate with said one functional group distributed at said one or more locations along the chemical backbone of said polymer, said permitting step producing a blend wherein said at least one polymer is associated with said at least one chemical agent at at least one of said one or more locations along the chemical backbone of said polymer; and wherein said chemical agent is in crystalline form which is broken by agitation or mastication;

(C) agitating or masticating said blend during or after said permitting step so as to produce a free flowing powder comprised of particles including said chemical agent in its crystalline form associated with said at least one polymer, and

(D) separating said supercritical fluid.

See other limitations of dependent Claims 2-29 and 31.

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6. In view of Applicants' 2nd RCE amendment, Applicants have claimed in parent **Claim 1** (amended three times totally) an unexpected way of effectively making **homogenous blends of chemical agents and polymers** in the presence of supercritical fluid. In comparing original scope, the process of parent **Claim 1** was amended in 1st RCE to carry two things as: (a) **extra step of agitating or masticating said blend** (after permitting step) so as to produce a free flow powder; and (b) the **chemical agent is formed as a crystalline solid when it is used in both combining step and permitting step**. In this 2nd RCE amendment, the process of parent **Claim 1** was further amended in two ways as: (A) to clarify the sequence of combining step, agitation or mastication step, and permitting step; and (B) to point out that the importance of crystalline form in making free flowing powder.

Such a chemical agent **when in crystalline form** is able to effectively impregnate into such supercritical fluid-induced expanded or swollen polymer as well as to be effectively broken apart by agitation or mastication step, while each of chemical agent and polymer has at least functional group so as to associate with each other to obtain **a homogeneous blend of small crystalline agent particles coated polymer**.

With respect to current two 102(b)/103(a) rejections, **each of Daly and Mandel is not “clearly” including or even mentioning the use of agitating or masticating (as an extra step or as a substep) so as to form free flowing powders**. Additionally, each reference does not realize the advantage of using a chemical agent when in a crystalline form which is effectively broken apart by agitation or mastication in making the claimed free flowing powder.

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7. For instance, Mandel may have applied such a similar agitation device for working up the polymerization product (particularly see column 3, line 58; column 5, line 1; column 7, line 32). However, nozzle spraying or depressurization is indeed different from current “agitation” method in many ways as well as the result will be at least somewhat different. Therefore, Examiner’s previous statement regarding in the course of preparing for nozzle spraying or depressurization, the same or similar step(s) such as agitating or masticating step may be **routinely** needed by each of Daly and Mandel can NOT be applied here. In summary, the issue of “inherent property for chemical agent to be in at least some crystalline form” can NOT be existed.

In order to be distinguished from prior art, the present invention has shown in examples along with some comparative examples for unexpected results for **making such a homogenous blends of chemical agents and polymers** in the presence of supercritical fluid (see **pages 12-21** for **examples** along with its comparative control examples in **Tables 1-6**). Therefore, the above references, in combination or alone, fails to teach or fairly suggest the limitation of present invention.

8. After further examination and search, the examiner found the following prior art did not teach the claimed limitation:

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US Patent No. **6,407,165 B1** to Wang et al. only disclose the preparation of elastomeric compositions for damping by adding an unsaturated damping additive to a vulcanizable composition of matter such as a functionalized polymer resin (abstract, line 1-5; column 9, line 11-42). However, supercritical medium is not disclosed or suggested. Additionally, such an unsaturated damping additive is not disclosed to be in some crystalline form. The composition is not in free flowing form. Therefore, Wang fails to teach or fairly suggest limitations of present application.

9. The two key issues in making the claimed homogenous blends of chemical agents and polymers in the presence of supercritical fluid, (A) by using agitation or mastication step during or after permitting step, and (B) to allow the claimed chemical agent to be in crystalline form so as to break up effectively in making free flowing powder, cannot be overcome by any or the combination of the above references, therefore, the present invention is novel.

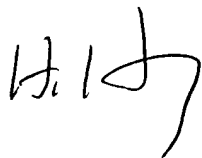
10. As of the date of this office action, the examiner has not located or identified any reference that can be used singularly or in combination with another reference including the above references to render the present invention anticipated or obvious to one of the ordinary skill in the art. Therefore, parent **Claim 1** is allowed for the reason listed above. Since the prior art of record fails to teach the present invention, the remaining pending dependent **Claims 2-29 and 31** are passed to issue.

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11. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

12. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Dr. Henry S. Hu** whose telephone number is **(571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the organization where this application or proceeding is assigned is **(571) 273-8300** for all regular communications. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Henry S. Hu



Patent Examiner, Art Unit 1713, USPTO

November 27, 2006



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